

AMENDMENTS TO THE ABSTRACT

Please add the following abstract to the end of the application:

A fluid temperature measurement probe, particularly for total temperature measurements in high temperature unsteady gas flows, such as in gas turbine engines. A pair of thin film resistance thermometers are deposited on the probe to sense its surface temperature at respective locations and the structure of the probe is configured such that the regions into which heat diffuses from the respective locations have different thermal products. In this way the thin film elements experience different heat transfer rates when exposed to the same fluid temperature. In one embodiment this is achieved by applying one of the elements to the surface of a solid rod of glass or ceramic and the other element to a portion which has been machined to leave an air pocket under a thin cylindrical wall of the rod material. In use the probe is exposed only temporarily to the high temperature fluid and withdrawn again before reaching its softening temperature. The total temperature T_t of the fluid can be calculated from the expression $T_t = T_{w1} + q_1(T_{w2} - T_{w1}) / (q_1 - q_2)$, where T_{w1} and T_{w2} are the probe surface temperatures as measured by the respective thin film elements and q_1 and q_2 are the respective heat transfer rates experienced thereby, the latter derived from the respective surface temperature histories.